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Application No. 10/553,400   Docket No.: 21029-00304-US1
Amendment dated January 29, 2009
After Final Office Action of September 29, 2008

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listings of the claims in this application.

LISTING OF THE CLAIMS:

1. Cancelled.

2. Cancelled

3. Cancelled

4. Cancelled

5. Cancelled

6. (Previously presented)   A process according to Claim 4 17, wherein the computer controls thermal distribution of temperature in the furnace as a function of a manufacturing program on removal from the furnace, and of a rolling program on exit, so as to optimize the heating characteristics of the products.

7. (Previously presented)   A process according to Claim 17, wherein adjustment of distribution of power injected into the enclosure favors the recuperation of energy in an entrance zone of the furnace.

8. (Previously presented)   A process according to Claim 17, wherein the distribution of thermal power injected in longitudinal and transverse directions of the furnace can be deduced from measurements made during the rolling operation which follows reheating.

9. (Previously presented) A process according to Claim 17, wherein a thermal profile of the furnace and a longitudinal thermal profile of the product delivered by the furnace are computed automatically by a computer using mathematical models, fuzzy logic systems or algorithms of neuro-predictive type.

10. Cancelled

11. Cancelled

12. Cancelled

13. (Previously presented) A furnace for reheating iron and steel products according to Claim 18, together with a computer using mathematical control algorithms based on a thermal objective with regard to the product so as to drive modifications of the circulations of the flue gases in the enclosure of the said furnace.

14. (Previously presented) A furnace for reheating iron and steel products according to Claim 13, further comprising sensors for supplying the computer with information allowing it to selectively control the longitudinal and/or transverse curves of temperature of the furnace, as a function of the position of a charge, of its characteristics and of its progress along the length of the furnace and of the temperature and exit temperature distribution objective sought for the product.

15. (Previously presented) A furnace for reheating iron and steel products according to Claim 13, further comprising sensors of temperature measurements made during a rolling operation subsequent to the furnace, these sensors being linked to the computer which produces therefrom the distribution of thermal power injected in the longitudinal and transverse direction of the furnace.

16. (Previously presented) A furnace for reheating iron and steel products according to Claim 13, wherein the computer comprises means programmed with mathematical models, fuzzy logic systems or algorithms of neuro-predictive type for determining the thermal profile of the furnace and profile of the product the longitudinal thermal delivered by the furnace.

17. (Currently amended) A reheat furnace process for reducing a hot point of the flames of a burner and continuously moving iron and steel products through the furnace resulting for controlling in control of the temperature homogeneity of iron and steel the products in a reheat the furnace which is equipped with lateral burners, the process comprising the steps:

providing at least two spread flame lateral burners on each lateral wall of the furnace;

operating the lateral burners in bang bang mode, the operating and stoppage time of each burner adjusted to obtain a desired temperature;

operating the burners at a regime close to or at maximum state,

choosing the order of ignition of the burners to -

a) promote swirling and circulation of the flue gases so as to reduce a hot point of the flame and to obtain a better temperature homogeneity of walls of the furnace and of the products; and

b) reduce the pressure variations in the furnace and in circuits for feeding the burners with fuel and oxidizer

wherein burners are started and stopped for modifying the circulations of the flue gases in an enclosure of the furnace by a computer using mathematical control algorithms based on a thermal objective defined for the product; and

wherein the computer controls thermal distribution selectively in accordance with longitudinal and/or transverse curves of temperature of the furnace, as a function of the position of a charge, of its characteristics and of its progress along the length of the furnace and of the temperature and exit temperature distribution objective sought for the product.

18. (Currently amended) A furnace for reheating iron and steel products comprising:

means for continuously moving iron and steel products through the furnace;

4

at least two spread flame lateral burners on each lateral wall of the furnace;

means for operating the lateral burners in bang bang mode wherein operating and stoppage time of each burner is adjusted to obtain a desired temperature;

the operating means further operating the burners at a regime close to or at a maximum state;

means for ordering the ignition of the burners to -

a) promote swirling and circulation of the flue gases so as to reduce a hot point of the flame and to obtain a better temperature homogeneity of walls of the furnace and of the products; and

b) reduce the pressure variations in the furnace and in circuits for feeding the burners with fuel and oxidizer;

wherein burners are started and stopped for modifying the circulations of the flue gases in an enclosure of the furnace by a computer using mathematical control algorithms based on a thermal objective defined for the product; and

wherein the computer controls thermal distribution selectively in accordance with longitudinal and/or transverse curves of temperature of the furnace, as a function of the position of a charge, of its characteristics and of its progress along the length of the furnace and of the temperature and exit temperature distribution objective sought for the product.